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FISHERIES RESEARCH BOARD OF CANADA
Atlantic Biological Station
St. Andrews, N. B.
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SH
37
N345
No. 22
Biological
& Medical
General Series, No. 22

CIRCULAR



February 1954

The Inshore Scallop Fishery of the Maritime Provinces

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The giant or sea scallop *Placopecten magellanicus* (Gmelin) (fig. 1), which is found along the northwest Atlantic coast from Newfoundland to Cape Hatteras, has become a commercially important species in recent years. In the Maritime Provinces active fisheries have developed in inshore areas in the Bay of Fundy, along the south shore of Nova Scotia and in the Gulf of St. Lawrence. In the Digby area of the Bay of Fundy boats are built and rigged specifically for scallop fishing which is the principal source of income for many fishermen there. In other areas, where scallop fishing

of about 30 miles in 30 to 60 fathoms of water. Most of the fleet operates out of Digby, a town situated about midway along the scallop-bearing area and the only sheltered harbour in the long rocky coastline. This fishery began about 1920 and although landings have fluctuated from year to year, the average annual catch during the last 20 years has been about $\frac{3}{4}$ million pounds valued between $\frac{1}{4}$ and $\frac{1}{2}$ million dollars to the fishermen.

FIG. 1



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is of lesser importance, the types of boats and gear have been influenced by those used in the more profitable groundfish or lobster fisheries, although other factors including the type of bottom and depth of water are of some importance.

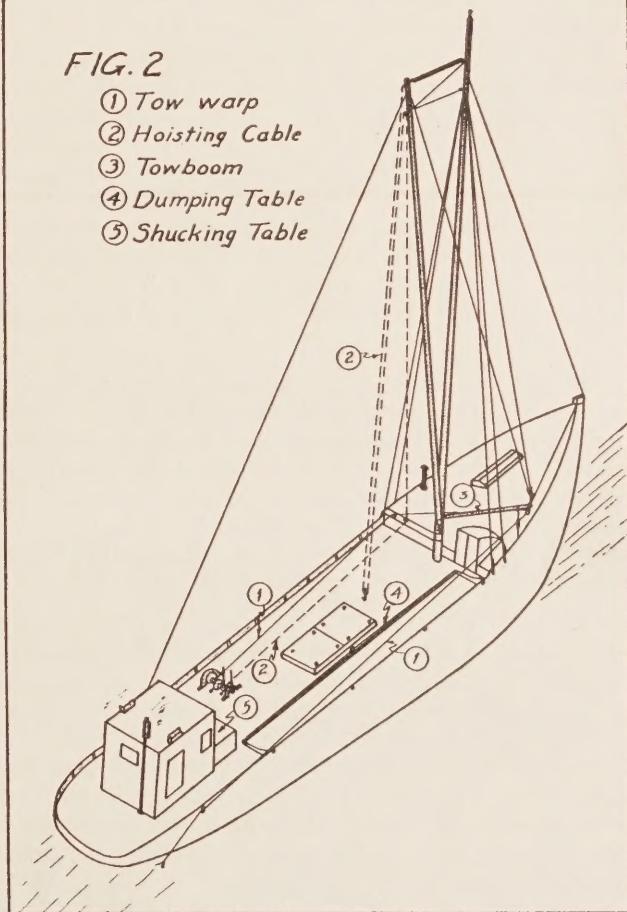
This circular describes types of scallop gear which fishermen have found to be most satisfactory for the particular area in which they are used. It is hoped that such information will be of value to those interested in rigging boats for themselves.

THE BAY OF FUNDY FISHERY

The largest and most productive scallop beds are found along the Digby shore of the Bay of Fundy. They lie between 3 and 12 miles offshore and extend along it from Centreville to Parker Cove, a distance

FIG. 2

- (1) Tow warp
- (2) Hoisting Cable
- (3) Towboom
- (4) Dumping Table
- (5) Shucking Table



BOATS

(1) DESIGN: A typical Digby scallop dragger (fig. 2) is about 60 ft. long with a beam of 16 ft. and a draught of 5 to 6 ft. Such boats are built locally of native materials and their construction is light compared with offshore draggers.

The design includes a fo'c'sle with accommodations for four persons and a wheelhouse aft which enables the skipper to observe and control dragging operations directly. The shucking table usually forms the forward part of the wheelhouse and is actually the raised portion of the engine room which is immediately underneath. Between the shucking table and trunk deck is a working deck of about 20 ft.

(2) DUMPING TABLE: On the starboard side of the working deck is a dumping table about 20 ft. long and 3 ft. wide, constructed of 2 in. spruce plank, and hinged to the starboard rail. A cable, with an eye in the centre, is fastened to the inner edge of the table at each end. The hook of the hoisting gear may be hooked into this eye and the whole table raised on its side on the rail. In this way the trash from each tow may be dumped over the side rapidly, and with little effort.

(3) MAST AND BOOMS: The mast is stepped just aft of the trunk deck and the main boom is fastened to it at a point immediately above the fo'c'sle deck. It is maintained in a fixed position so that the hook on the hoisting cable hangs midway over the deck and just inside the rail. This boom is made fast with one stay to the port quarter and one to the tow boom.

The tow boom is fastened to the mast above the main boom and projects forward and beyond the starboard rail at an angle of 70° to 80° with the centre-line of the boat. Its position is fixed by four stays from the boom with the stem, mast, main boom and deck.

While both towing and hoisting booms are maintained in position by $\frac{3}{8}$ in. steel cables, eye-blocks and rope are incorporated at one end of each stay to give the rigging some elasticity in the event of sudden and heavy strains.

(4) POWER: Most of the boats are powered with marine gasoline engines of about 140 h.p. These engines turn a 30 in. diameter x 26 in. pitch propeller with a 4:1 reduction. In some instances, for additional power, a light engine of about 100 h.p. is installed on the quarter, turning a 20 in. diameter x 16 in. pitch propeller with a 1½:1 reduction. Recently a small number of boats have installed diesel engines.

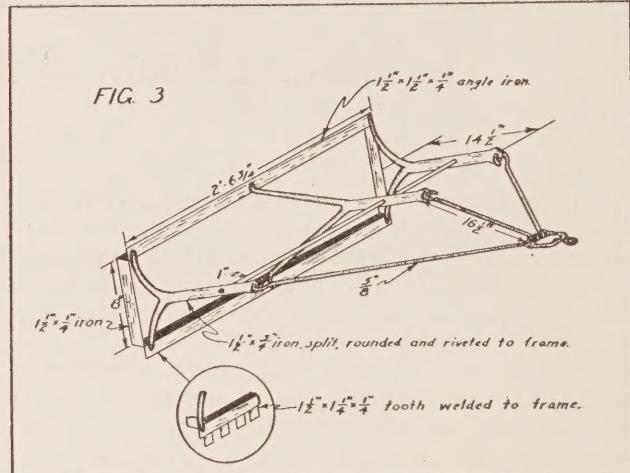
(5) HOISTING POWER, TOW WARP AND HOISTING TABLE: While deck engines are used by many boats for hoisting the drags, the trend seems to be towards a power take-off from the main engine in the form of a truck transmission and rear-end. The hoist is a double drum friction type with sprocket and chain drive. The tow warp, 150 fathoms of $\frac{1}{2}$ in. steel cable, is wound on the port drum of the winch and a short hoisting cable of the same material on the other drum.

The tow warp (fig. 2) runs along the port side of the deck to a bollard on the trunk deck, then forward of the mast to a bollard at the end of the tow boom and aft through the snatch block on the starboard quarter and down to the drags on the bottom.

The hoisting cable (fig. 2) parallels the tow warp to a bollard on the trunk deck, then to a fixed block on the main boom, back to the deck through a single moveable pulley equipped with a hook and returns to the withe on the end of the boom.

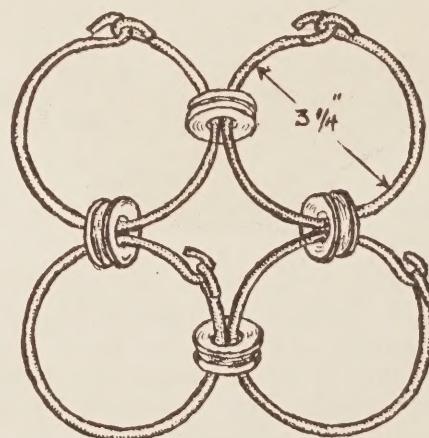
GEAR

(1) INDIVIDUAL DRAG: The early scallop drags used in the Bay of Fundy varied greatly in design and size but it was eventually found that a gang of small drags (fig. 3) with scraping edges on both sides were the most efficient and most easily handled. During the past 10 to 15 years no significant changes in their construction have taken place.



The bag consists of 168, 11/64 in. wire rings having an inside diameter of $3\frac{1}{4}$ in. and linked together with one in. washers (fig. 4) and fastened to the frame with link clinches. The bag is seven rows deep with each row containing 24 rings. The free end of the bag is stapled to a piece of 2 in. x 4 in. x 2 ft. 6 in. hardwood and to this tail-piece is fastened a 3 ft. length of chain which is used with the hoisting gear to empty the bag.

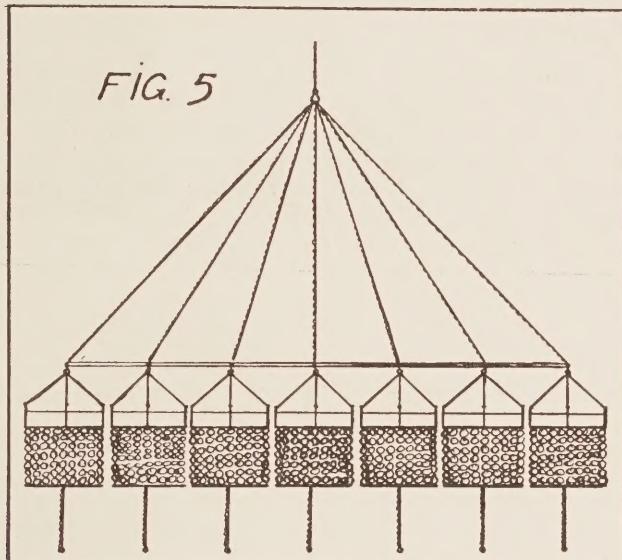
FIG. 4



(2) GANG OF DRAGS: Since the maximum length of scallop dragging equipment in the Bay of Fundy is limited by law to 18 ft., a gang of seven drags (fig. 5) constituting a total length of 17 ft. $11\frac{1}{4}$ in. is used. The individual drags are shackled to collars at 3-ft. intervals on a 2 in. x 18 ft. heavy steel pipe. The 10-ft. bridle consists of a master swivel and seven chains of $5/16$ in. links leading from it to collars opposite each drag on the spreader or drag-bar.

FISHING OPERATIONS

(1) TOWING: As is evident from the foregoing descriptions, the drags are towed from the starboard side of the boat. In preparation for a tow the drags are placed on the starboard rail so that the scraping edge of the frame is just outside the rail with the bags hanging overboard. The drag-bar to which they are



attached lies inboard on the dumping table and the whole rig is secured in this position by two ropes which extend to either end of the drag-bar from deck rings. This is accomplished by taking a turn of rope with a single bow knot near each end of the bar. In this position the weight of the drags is enough to pull the drag-bar and bridle overboard as soon as the ropes are unfastened. When the boat is in position on the bed the whole rig is let go by slackening off the ropes and before the cable is completely run out it is caught up with a hook and placed in the snatch block on the starboard quarter. The length of warp run out is about three times the depth of water in which the tow is being made. As the tow warp pays out, the boat is accelerated and run across the tide but swings with it gradually, as towing begins at a speed of about 2 knots.

The drags are towed for from 15 to 30 minutes, depending upon the bed fished, the longer tows being made on the smoother bottom.

(2) HOISTING: After the tow is completed the gear is hoisted until the master swivel of the bridle reaches the bollard on the tow boom. The hook on the hoisting cable is then passed through the eye of the swivel and the entire gang of drags is lifted in clear of the rail, then lowered on the dumping table. After the drag-bar is secured by the ropes the contents of the drags are emptied on the dumping table with the aid of the winch, the drags placed in position over the rail and the boat run back on her course in preparation for another tow. During the tow marketable scallops are picked up in wire bushel baskets and emptied on the shucking table, the trash and small scallops are dumped overboard and all hands shuck scallops.

(3) NUMBER OF FISHING DAYS: Since the gear

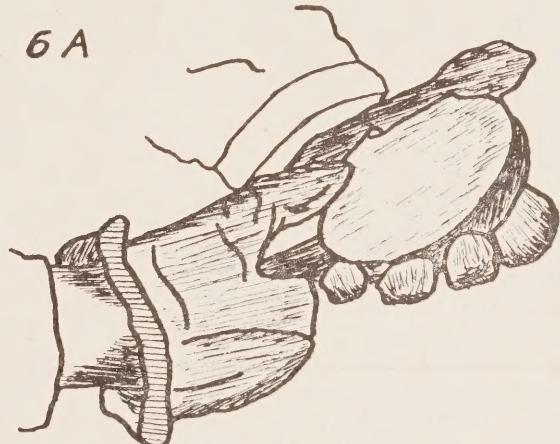
and catch weigh about one ton it is hazardous to lift it aboard if the boat is rolling excessively, consequently dragging operations are confined to comparatively fine days of which there are only about 55 in the average, seven-month Bay of Fundy season from October 1 to April 30. As a result boats often fish long periods, up to 48 hours, during favourable weather conditions. Normally the fishing day is about 15 hours with approximately 12 hours spent in actual dragging.

SHUCKING

This procedure has three stages:

(a) The scallop is held in the left hand with the hinge in the palm and the flat left shell towards the shucker (fig. 6 A). The shucking knife, held in the

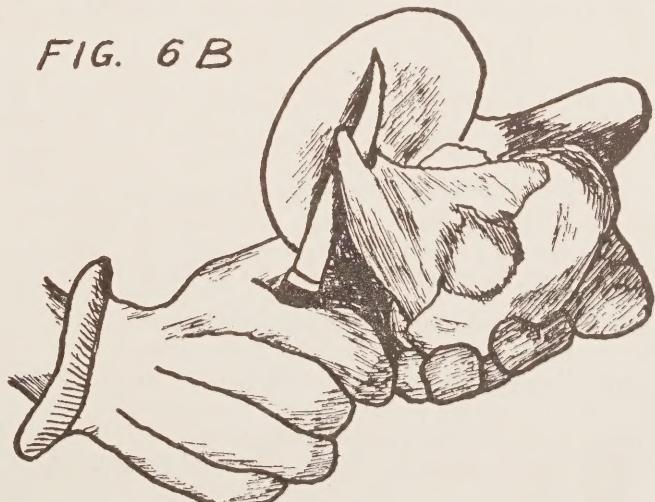
FIG. 6 A



right hand, is inserted forward and upward along the inner face of the flat shell, being entered just above the right-hand corner of the hinge. The blade is then forced backward and downward and towards the operator in a semi-circular motion so as to sever the attachments of meat (muscle) and rim (viscera) from the flat valve.

(b) In the next step (fig. 6 B) the point of the knife is hooked downward and away from the operator under the thick muscular mantle edge. The thumb is

FIG. 6 B

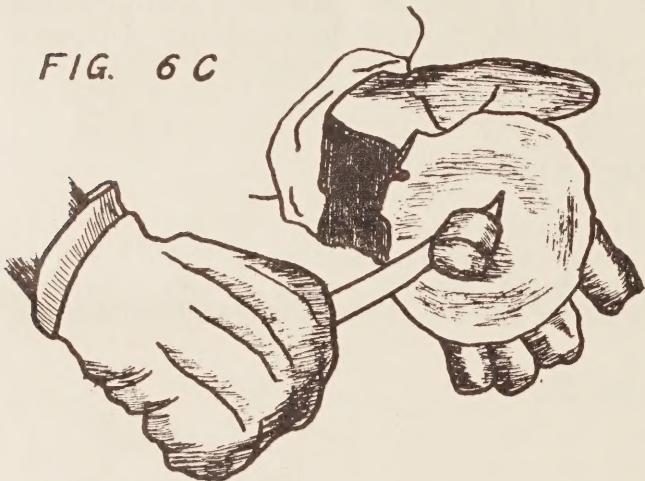


then pressed against the shell thus clamping the mantle edge between it and the knife. By lifting

upward and towards the operator, the shell and the whole of the rim comes away leaving only the meat attached to the cupped valve in the left hand.

(c) The meat is then scraped off into the shucking pail (fig. 6 C).

FIG. 6 C



HANDLING OF THE MEATS

AT SEA: When the shucking pail is full it is dumped into a large galvanized can containing sea water and capable of holding about 200 lb. of meats. Since the surface water temperatures in the Bay of Fundy seldom exceed 55° F., there is no apparent deterioration in the quality of the meats even during summer months. To prevent heating of the closely packed meats during long fishing periods sea water is added occasionally.

Upon landing, the meats are dipped from the large can with a mesh ladle into enamelled 5-gallon containers in which they are transported to the processing plants.

ASHORE: The scallops are washed in a 3% brine solution and all foreign materials, such as particles of sand, bits of broken shell or part of the intestine which often adheres to the muscle, are removed. The meats are then packed in gallon tins, iced, and shipped to markets or frozen to be released at more favourable prices.

VARIATIONS IN GEAR AND FISHING METHODS

(1) GRAND MANAN: The most important scallop beds on the New Brunswick shore of the Bay of Fundy are found on the eastern and southern sides of Grand Manan Island in depths of about 10 to 30 fathoms.

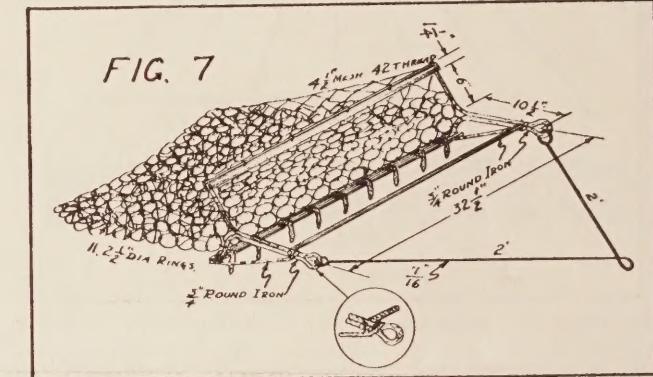
While there are exceptions, it may generally be stated that the boats used are the Cape Island type with wheelhouse and engine amidships and well-deck aft.

Gear and rigging are Digby type with the exception that four or five drags are towed instead of the usual seven.

Catches compare favourably in size with those which would be made by comparable boats fishing on the Digby beds.

(2) LUNENBURG COUNTY: Records indicate that the scallop fishery in Lunenburg County is the oldest in the waters of the Maritime Provinces. Small beds are found in shallow water, 4 to 10 fathoms, in the inlets and among the islands from Lahave River to St. Margaret Bay.

The boats involved in the fishery are small, 20 to 30 ft., inshore fishing craft powered with a 4 to 6 h.p., one cylinder engine. The drags used are much lighter in construction than Digby drags, having only one scraping edge and the top of the bag made of twine (fig. 7). Three or four of these special Lunenburg County drags are towed at one time, each on a



separate warp. Hoisting and boarding are done by hand.

Catches average 20 to 30 lb. of meats per fishing day.

(3) GULF OF ST. LAWRENCE AND NORTHUMBERLAND STRAIT: The history of scallop fishing in the Gulf of St. Lawrence has been one of many fluctuations in abundance of scallops and of discovery of new beds. Generally the fishery has been concentrated off the east coast of Prince Edward Island and in the Northumberland Strait where scallops are found in 10 to 15 fathoms of water on sand-mud bottom.

The irregularity of the abundance of scallops has resulted in a great variety in the size and design of boats. Decked groundfish dragger using Digby-type drags share the catches with small open lobster boats equipped with Lunenburg County type. In both instances the scraping edges of the drags are modified (inset fig. 3 and fig. 7) by the addition of teeth which fishermen maintain are more efficient in preventing the drags from clogging too rapidly with debris. The lobster boats use power gurdies for hoisting the drags but board them manually.

During periods of abundance landings are good with small craft catching 100 to 200 lb. of meats per day and the larger boats 500 to 600 lb.